REMARKS

This amendment follows the preliminary amendment dated September 23, 2005 and is submitted prior to the first office action to more clearly distinguish applicants' invention over the prior art monolithic flat panel and integrated circuit displays described in the following prior art references cited by the European Patent Office ("EPO") in a May, 2006 search report: US 2002/047550 A1 (sic) US 2002/0047550 A1; EP 1 194 013 A; EP 1 077 444 A; US 6,291,942 B1; and EP 1 335 430 A. A copy of the search report is attached as Exhibit 1. It is to be noted that the '550 application has matured into U.S. Patent Nos. 6,774,578 and 6,903,516.

Also, enclosed is an affidavit dated September 8, 2006 of Mr. Stewart Hough. Mr. Hough is an acknowledged expert in the various display technologies involved in applicants' LED video display and the monolithic and integrated circuit displays described in the references cited in the EPO Search Report. He discusses, in some detail, the different technologies involved and why the differences between applicants' LED video display apparatus and the prior art displays would not have been obvious to one of ordinary skill in the art. This amendment and Mr. Hough's affidavit are being submitted at this time to expedite the prosecution of this application with the goal of providing patent protection for Visioneered Image Systems, Inc. the owner of the subject application. The electronic billboard described and claimed in this application has generated considerable interest in the trade including interest from customers and competitors. Visioneered is a small start-up company whose success depends to a significant extent on obtaining relevant patent protection. For the above reasons an early examination and allowance of this application is respectfully requested.

Applicants have made an significant and important contribution to the art of LED video

displays in the form of an electronic billboard suitable for use indoors as well as outdoors. The incorporation of strategically placed light sensors or photodiodes and an optical feedback mechanism for feeding back a portion of each LED output to an associated photodiode provides a number of advantages not readily available in conventional electronic billboards, i.e, (1) self-calibration to maintain the desired luminance output and spectral characteristics over an extending life span; (2) ability to raise and lower the light output to accommodate changes in ambient light; (3) detection of failed LEDs and pixels; and (4) snapshot views of the displayed image on demand for advertisers proof of performance and record keeping purposes. A copy of an article written by a Visioneered consultant and published by an independent trade magazine is enclosed as Exhibit 2.

One reason for the amendment is to more clearly distinguish the light emitting elements, i.e, LEDs used in applicants' invention from the organic light emitting diodes ("OLEDs") used as the light emitting elements in the flat panel monolithic displays described in four of the EPO cited references.

While it is believed that the term light emitting diodes (LEDs) as used in the original claims adequately distinguishes applicants' light emitting elements from the prior art OLEDs, the independent claims have been amended to call for each individual group or pixel to (a) consist of (or be comprised of) of LEDs packaged singly (as in Figs. 3 and 4) or together (as in Fig. 6) or (b) LED-DIEs. See the Specification at page 6, lines 6-8, pag 8, lines 13-22; Hough Affidavit page 4. This terminology identifies the discrete inorganic light emitting elements used in applicants' invention and distinguishes such elements from the thin film geometry of OLEDs. As is discussed by Mr. Hough, because of the diverse technologies involved the flat panel monolithic displays of

the cited references are not reasonably pertinent to the particular problems with which the subject invention is addressed. (Hough Affidavit pages 5-11)

Turning now to the claims, claims 1-3 define, to applicants' knowledge, the fist video display utilizing discrete or inorganic LEDs as the light emitting elements including a light sensor or photodiode capable of measuring the luminance output (including the luminous intensity of the light output) form each LED. This display, suitable for outdoor use in daylight, would not have been obvious to one or ordinary skill in the art in view of the above references. (Hough Affadavit pages 5-11)

Mr. Hough, on pages 12-15, discusses the differences in scale and dimensions between the prior art monolithic flat panel thin film displays and applicants' discrete LED video display and how these differences do not render the teachings in the flat panel monolithic display technology applicable to applicants' invention. Claims 1-3 are patentable over the above referenced prior art.

Dependent claim 4 calls for means, in the form of a diffuser element (lens/reflector 26, Fig. 4) and/or internal reflector, e.g., internal pixel housing wall and reflector 33, to project light from the LEDs to the observer(s) and reflect back a portion of the emitted light to the light sensor. This additional structure is also missing from the above art.

While several of the above references allude to incorporating optical feedback to modify the light output of monolithic displays they do not teach a feedback system designed for use with discrete LEDs. Claim 4 is patentable. See Hough Affadavit pages 7-9.

Claims 5-13, 25-33 and 34-42 which depend from claims 1, 2, 3 and 4 define initial characterization, subsequent calibration and failure of individual LEDs as well and the pixels. These claims are also patentable over the reference.

Independent claim 14 incorporates the subject matter of claims 1 and 4 and is patentable for the above reasons. Dependent claims 15-18 are also patentable.

Claim 19 defines the LEDs as LED-DIEs with the DIE notation signifying the dicing operations to provide discrete individual or packaged LEDs. (Hough Affidavit page 4) This claim as well as dependent claims 20-24 are also patentable.

This application is now believed to be in condition for allowance and such action is respectfully requested. If applicants' attorney can be of any further assistance please call the undersigned at the number provided.

Respectfully submitted,

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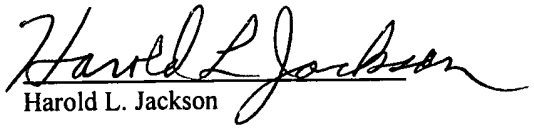
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on September 19, 2006.

September 19, 2006



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19.05.06

Reference	Application No./Patent No.
P/50600.EP01	04760285.9 - 2205 PCT/US2004012122

Applicant/Proprietor
Visioneered Image Systems, Inc.

COMMUNICATION

The European Patent Office herewith transmits as an enclosure the supplementary European search report under Article 157(2)(a) EPC for the above-mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

☑ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

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If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.

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Exhibit 1

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European Patent Office

SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 04 76 0285

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2002/0047550 A1 (TANADA YOSHIFUMI) 25 April 2002 (2002-04-25) * paragraphs [0002], [0013] - [0015], [0027] - [0029], [0064], [0067] - [0071], [0103] - [0109], [0118] - [0120], [0125]; figures 1,2 * * abstract *	1-24	INV. G09G3/32
X	EP 1 194 013 A (EASTMAN KODAK COMPANY) 3 April 2002 (2002-04-03) * paragraphs [0001] - [0004], [0011] - [0013], [0017], [0020], [0023] - [0028], [0032]; figures 1,2,5 *	1-24	
A	EP 1 077 444 A (AGILENT TECHNOLOGIES, INC. ; AGILENT TECHNOLOGIES INC) 21 February 2001 (2001-02-21) * paragraphs [0002], [0006], [0010], [0013], [0014], [0018] - [0026], [0047], [0049], [0050]; figure 1 *	1-24	
A	US 6 291 942 B1 (ODAGIRI HIROSHI ET AL) 18 September 2001 (2001-09-18) * column 6, line 1 - line 45; figure 5 *	1-24	TECHNICAL FIELDS SEARCHED (IPC) G09G
P,A	EP 1 335 430 A (EASTMAN KODAK COMPANY) 13 August 2003 (2003-08-13) * the whole document *	1-24	

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search	Date of completion of the search	Examiner
The Hague	28 April 2006	Fanning, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 76 0285

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-04-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002047550 A1	25-04-2002	NONE	
EP 1194013 A	03-04-2002	CN 1347074 A	01-05-2002
		DE 60100732 D1	16-10-2003
		DE 60100732 T2	05-08-2004
		JP 2002162934 A	07-06-2002
		US 2004032382 A1	19-02-2004
EP 1077444 A	21-02-2001	JP 2001092414 A	06-04-2001
		US 6344641 B1	05-02-2002
US 6291942 B1	18-09-2001	JP 2001013903 A	19-01-2001
EP 1335430 A	13-08-2003	JP 2003271098 A	25-09-2003
		US 2003151569 A1	14-08-2003

OUTDOOR ADVERTISING MAGAZINE

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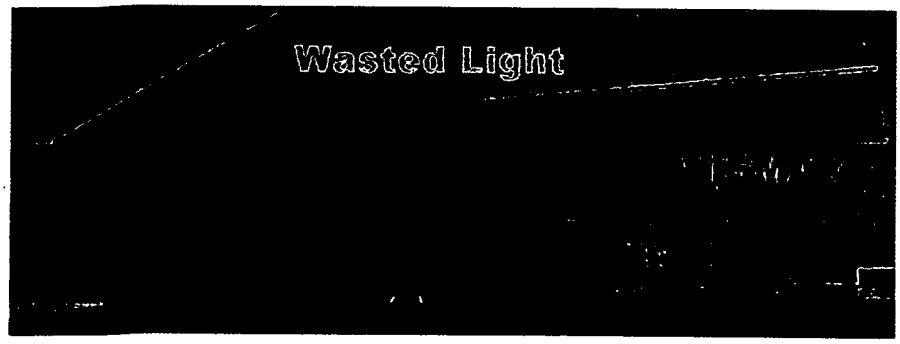
OAM.NET • MAY/JUNE 2006 • $6 VOL. 15, ISSUE 3

INSIDE...

Exhibit 2

BORN FOR THE Billboards

LOUIS M. BRILL



Electronic billboards have begun to turn on outdoor advertising as a new format of highway advertising for passing vehicular traffic. Although electronic billboard systems are now in place on selected highways, several major outdoor advertising companies are expected to expand with new electronic billboard inventory along many aditional United States highways within the upcoming year and onwards.

While many electronic billboard systems are in use now, a new, second generation electronic billboard screen has evolved and is being offered by Visioneered Image Systems (VIS) of Garden Grove, CA, who is a manufacturer of LED electronic billboards. The company has recently created the VISMAX electronic billboard display with state-of-the-art technical enhancements including holographic optics, brightness adjusting photo sensors and PANATONE color matching all to provide maximum viewing advertising impact to passing traffic. To compliment existing billboard structures, VISMAX is designed to conform to available industry outdoor formats including a 30 sheet (12 feet by 24 feet), a Bulletin (14 feet by 48 feet) and a spectacular (20 feet by 60 feet).

The beauty of the VISMAX electronic billboard system, says Karl Boldt, EVP Marketing and Founder, "is how it functions as a retrofit to easily replace an existing fixed print vinyl billboard as its electronic counterpart. Most current electronic billboards are too heavy to hang on an existing billboard structure without extensive or expensive modifications to its primary structure. VISMAX billboards are engineered with a low weight design that allows it to be mounted as a replacement electronic display without having major structural improvements that would require building permits."

"How this is addressed is in the conversion process of transforming the existing billboard's structural foundation to be made ready for its electronic billboard counterpart. In doing this, much of the existing support components on a print billboard become non-essential and can be removed as the sign is made ready for its electronic display. Front and back catwalks, HID lamps and the billboard back panels can all be taken off of the main structure of the billboard frame. With this modification, the VISMAX – 30 sheet or bulletin LED screens are then placed on the existing billboard structure with the addition of power and data connections to complete its digital presence. In the transformation process, the added VISMAX – 30 SHEET is just about equal in weight to the previously mentioned removed structural components and therefore do not require any reinforcing supports to be added to a conforming billboard frame.

Electronic billboards serve many masters simultaneously including the billboard owner/operator, the media planner, the client on the board and finally, passing vehicular traffic that the board is directed to. Perfect color, brightness and ease of viewing must all come together the few moments during which the driver passes by the billboard. To understand how the VISMAX billboard has optimized these requirements, Boldt offers a review of the VIS board's various supporting subsystems as an outdoor electronic display.

• BRIGHTNESS

VIS electronic billboards are rated to emit nearly 14,000 nits brightness uncorrected. By comparison, a typical outdoor electronic billboard is rated for daylight brightness at 6,000 nits. VIS billboards are capable of offering variable brightness levels

and are characterized for uniformity and Color Correction adjustments. Post- characterization, a VIS sign can display approximately 12,000 nits, when needed. A VIS sign can use this superior brightness to maintain perfect visibility when struck by direct sunlight. However during most daylight operations, the VIS sign is set at 6,000 nits which creates a sufficient viewing opportunity for driver contact with billboard. At this brightness traditional LED Boards are near maximum LED output where the VIS boards are at half their maximum output, nearly doubling the operating life

• SIGN FACE VIEWABILITY

As the LED sign radiates its image, the tendency of the image is to form a "viewing cone" which conforms to the laws of optics as the sign image directly expands in size the further it travels from its original light source. In this case the sign creates a viewing cone greater in size than can be seen by passing traffic, which is wasted light.

To optimize that situation VISMAX is able to massage its illuminated viewing cone into a more direct and accessible angle of view for passing drivers. It does this by using a state-of-the-art holographic optical element (HOE) to create 'beam shaping' by placing the HOE film directly in front of the LED Pixel Array of each Module . This creates a 20 degree vertical viewing cone and 60° of a horizontal width to put more of the image light where the driver can see it than traditional LED displays using Wide-oval LEDS

• SELF-CALIBRATION CREATES UNIFORMITY OF COLOR AND BRIGHTNESS

An LED sign face is a composite of multiple LED tile modules that are all stacked together to make up a single billboard. In an ideal state, these tiles appear seamlessly connected together with an equal brightness. This gives

the billboard the appearance of a large format, single sign face electronic display.

LED brightness, however is relative, and over time, the brightness levels of all LED devices decline. In an RGB LED Module pixel array, each color has its own specific lifetime rating and gradually, each of those colors in its normal aging process begins to dim at separate diminishing rates. The result is non-uniformity of the screen display image output with uneven brightness of the screen face. A second issue is the screen tiling segmentation which shows up as separate LED tiles begin to appear as individual screen segments. An on-board lighting solution that VISMAX offers is the ability to continually adjust less-than-perfect LEDs to regain their original brightness levels.

To solve these luminance problems, VIS has installed a brightness adjusting photo detector in each full color LED pixel unit. The photo detectors continually measure the sign's ongoing LED light output. With its accompanying software it is able to detect dimming LEDs and correct declining brightness levels back to their original light output level at the full 6,500 nits brightness.

This is an on-board component of the sign's self-calibration process, done at night with Sign Health & maintenance performed continuously. The process takes less than a minute, and once completed, has reset all less than perfect LEDs back to their uniform, original factory setting.

Self-calibration is much of the core of the VIS sign technology as it not only corrects for LED degradation, but also maintains perfect image quality on the sign face, provides proof of performance and also enhances content security within the VISMAX sign system.

• PANATONE® COLOR MATCHING

Advertisers spend fortunes on using specific colors as part of their brand. Coca-Cola has its 'red,' Prudential has its 'sky-blue' and Kodak has its bright yellow film box. As these products are advertised on electronic signs, the sponsors, rightly so expect to see their "official" colors accurately represented on these electronic screens.

The VISMAX sign system has a 'color matching' process that is certified to match PANATONETM CRT monitor calibration. This means that the same PANATONETM colors specified by advertisers and ad agencies will be reproduced in their official brand colors on the VISMAX billboard.

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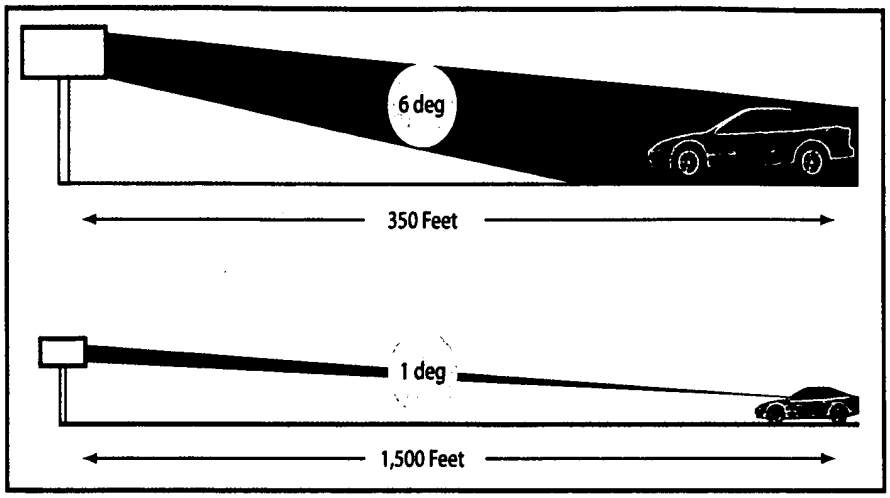
• PROOF-OF-PERFORMANCE

As advertisers lease time on electronic billboards, they must be provided with a proof-of-performance that advises them of the day, date and times of when their ads appeared on the LED screen. The VISMAX screen accommodates this need by actually taking an on-board picture of each ad as it is being shown on the screen, using the same photodetectors that perform self-calibration. The company refers to this as photonic validation and shows the advertiser that his or her content has run and where it was scheduled. To further confirm the sign's performance, advertisers can log onto the billboard over the Internet and watch their ads being displayed in real time.

To manage the overall maintenance of each of its electronic displays, VIS offers a self-diagnostic process known as its Electronic Billboard Operating System (EBOS) which performs a continuous functional maintenance analysis during each billboard's operation. EBOS can be managed at either VIS's central command center which can oversee the complete network of its electronic billboards or if the client prefers, they can operate their own independent EBOS command center. Either way, the system maintains an ongoing diagnostics, alerts the client to potential or already established component failures and allows the operator to provide immediate maintenance to regain full billboard service for ongoing advertising contact with the public.

"Despite the fact that electronic billboards have been around awhile, there are many billboard owner/operators," says Tony Materna, president and CEO of VIS, "who are still learning about these kinds of billboards and what their capabilities are. Our biggest challenge is in educating billboard owners about the differences between print and electronic advertising and how to properly prepare advertising messages for an electronic billboard situation."



"We describe our electronic billboards as, 'looks like television, acts like radio.' This means instead of selling space (print billboards), we're selling timeslots (electronic billboards) which is more akin to how radio sells its advertising. This involves getting billboard operators used to thinking about 'day parting' (selling certain kinds of advertising at certain times of the day). It also means learning about selling multiple advertising spaces on a single board, which will cycle through each of the ads on the same board at a fixed-time rotation."

"When a customer buys a VISMAX board, it also includes two to three days of training in how to manage their sign," says Marino. We also advise them on how to operate the sign using the VIS EBOS setup to manage their sign system. This includes the best ways to design advertising for the billboard and how to load it into the sign's advertising loop. We also have an introduction on how to familiarize the billboard's owners with how they can educate their customers on the basics of advertising on an electronic billboard."

VIS sells direct to major and local billboard operators as they require these types of boards. The company also expects to work with regional outdoor advertising reps who would be looking for dedicated brand-specific billboards in collaboration with media planners and media buyers of specific outdoor advertising campaigns. To insure complete customer satisfaction, VIS offers a warranty that insures PMS compliance @ 6,000 nits brightness performance throughout a five-year operating life. The company expects its electronic billboard.to last much longer depending on the environment and content.

CONCLUSION

Electronic billboards are now being seen as much of the future of outdoor advertising. Visioneered Image Systems new VISMAX displays have embraced that future to help evolve outdoor advertising establish a new level of maturity in direct marketing contact to the public. For electronic billboard operators, it's direct marketing in its best light.

For more information:
www. vis-displays.com

Louis M. Brill is a journalist and consultant for high-tech entertainment and media communications. He can reached at (415) 664-0694 or louisbrill@sbcglobal.net